

Marine Life Protection Act Initiative



Marine Birds Evaluation for the MLPA South Coast Study Region

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Presentation to the Master Plan Science Advisory Team

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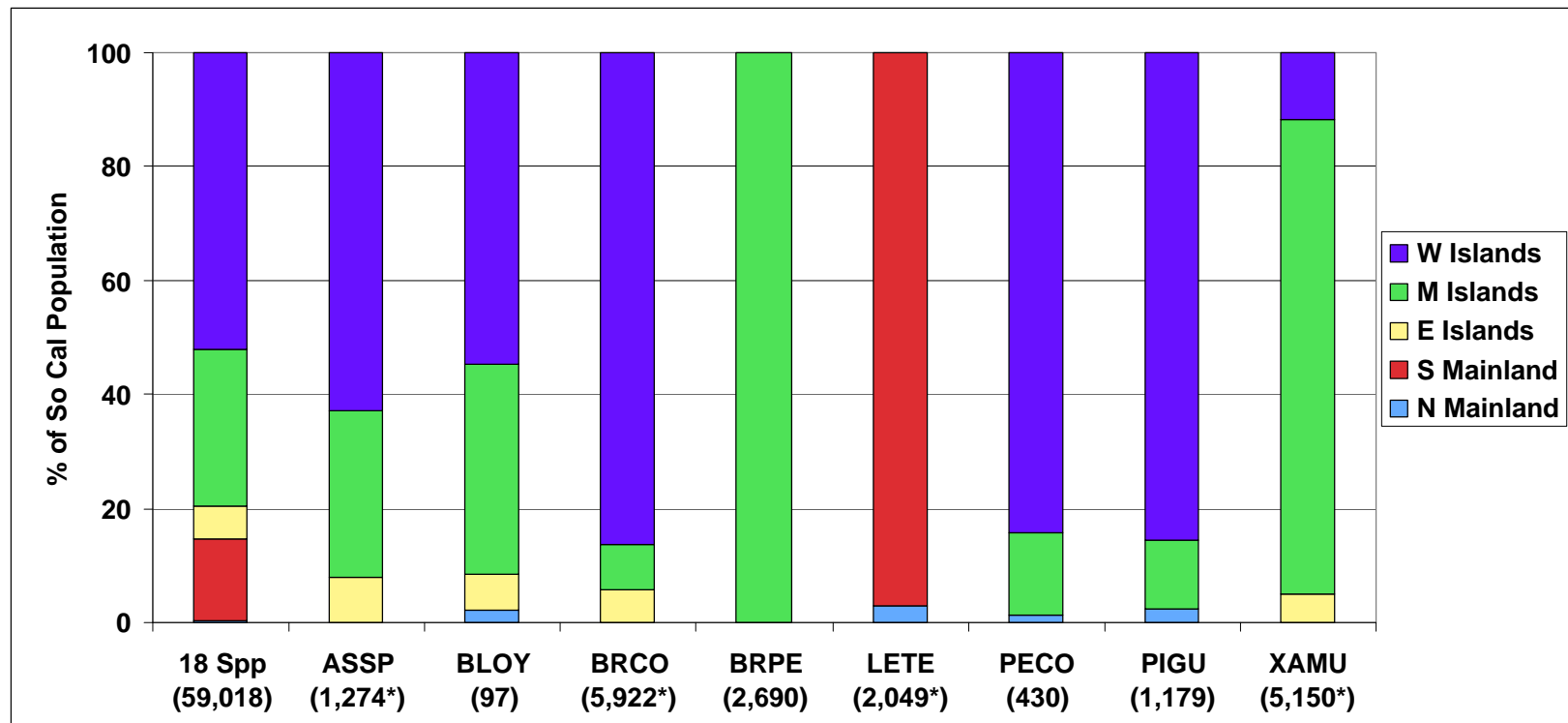


Methods Overview

- **Benefits to Marine Birds**
 - Direct: Decreased disturbance at breeding, resting and foraging sites
 - Indirect: Protection of prey populations
- **Five Analyses**
 - Protection of seabird breeding colonies
 - Protection of seabird roost sites
 - Protection of near-colony foraging areas
 - Protection of neritic foraging ‘hot spots’
 - Protection of estuarine and coastal habitat
- **Round 1 analyses considered only state marine reserves (SMRs)**

Seabird Breeding Colonies

Distribution of Total Seabird Population and SLTB (values in parentheses indicate population estimates)



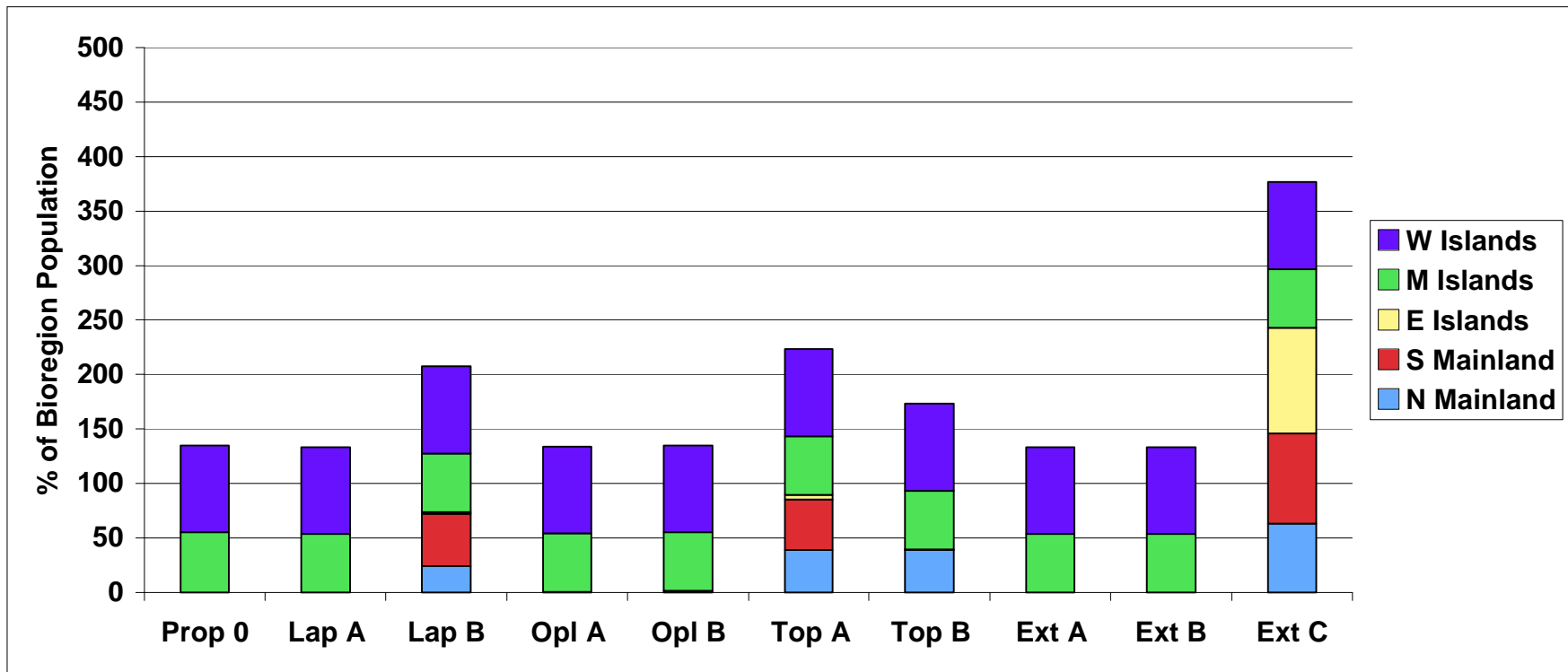
- These population estimates will be updated prior to the Round 2 analysis

SLTB =



Seabird Breeding Colonies

Protection of all Breeding Seabird Colonies



Prop = Proposal Lap = Lapis Opl = Opal Top = Topaz Ext = External



Percent of Bioregion Breeding Population

SLTB: Brandt's Cormorant

	West Islands	Mid Islands	East Islands	S Mainland	N Mainland
Prop 0	36.8 %	29.0 %	0 %	0 %	N
Lap A	36.8 %	29.0 %	0 %	0 %	E
Lap B	36.8 %	29.0 %	0 %	100 %	X
Opl A	36.8 %	29.0 %	0 %	0 %	T
Opl B	36.8 %	29.0 %	0 %	100 %	
Top A	36.8 %	29.0 %	9.1 %	100 %	R
Top B	36.8 %	29.0 %	0 %	100 %	O
Ext A	36.8 %	29.0 %	0 %	0 %	U
Ext B	36.8 %	29.0 %	0 %	0 %	N
Ext C	36.8 %	29.0 %	90.9 %	100 %	D

Prop = Proposal Lap = Lapis Opl = Opal Top = Topaz Ext = External



Percent of Bioregion Breeding Population

SLTB: Black Oystercatcher

	West Islands	Mid Islands	East Islands	N Mainland
Prop 0	13.3 %	36.1 %	0 %	0 %
Lap A	13.3 %	33.3 %	0 %	0 %
Lap B	13.3 %	33.3 %	0 %	0 %
Opl A	13.3 %	33.3 %	0 %	0 %
Opl B	13.3 %	33.3 %	0 %	0 %
Top A	13.3 %	33.3 %	33.3 %	100 %
Top B	13.3 %	33.3 %	0 %	100 %
Ext A	13.3 %	33.3 %	0 %	0 %
Ext B	13.3 %	33.3 %	0 %	0 %
Ext C	13.3 %	33.3 %	66.7 %	100 %

Prop = Proposal Lap = Lapis Opl = Opal Top = Topaz Ext = External



Percent of Bioregion Breeding Population

SLTB: Pelagic Cormorant

	West Islands	Mid Islands	N Mainland
Prop 0	66.3 %	6.5 %	0 %
Lap A	66.3 %	6.5 %	0 %
Lap B	66.3 %	6.5 %	0 %
Opl A	66.3 %	6.5 %	0 %
Opl B	66.3 %	6.5 %	0 %
Top A	66.3 %	6.5 %	100 %
Top B	66.3 %	6.5 %	100 %
Ext A	66.3 %	6.5 %	0 %
Ext B	66.3 %	6.5 %	0 %
Ext C	66.3 %	6.5 %	100 %

SLTB: Pigeon Guillemot

	West Islands	Mid Islands	N Mainland
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	100 %
	55.4 %	13.6 %	100 %
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	0 %
	55.4 %	13.6 %	100 %

Prop = Proposal Lap = Lapis Opl = Opal Top = Topaz Ext = External

Percent of Bioregion Breeding Population

SLTB: Least Tern

	S Mainland	N Mainland
Prop 0	0 %	0 %
Lap A	0 %	0 %
Lap B	12.9 %	39.3 %
Opl A	2.0 %	0 %
Opl B	5.3 %	0 %
Top A	6.5 %	0 %
Top B	2.0 %	0 %
Ext A	0 %	0 %
Ext B	0 %	0 %
Ext C	26.1 %	39.3 %

SLTB: Brown Pelican

Mid Islands
93.5 %
93.5 %
93.5 %
93.5 %
93.5 %
93.5 %
93.5 %
93.5 %
93.5 %
93.5 %

Prop = Proposal Lap = Lapis Opl = Opal Top = Topaz Ext = External



Percent of Bioregion Breeding Population

SLTB: Ashy Storm-Petrel

	West Islands	Mid Islands	East Islands
Prop 0	75.0 %	11.3 %	N
Lap A	75.0 %	11.3 %	E
Lap B	75.0 %	11.3 %	X
Opl A	75.0 %	11.3 %	T
Opl B	75.0 %	11.3 %	
Top A	75.0 %	11.3 %	R
Top B	75.0 %	11.3 %	O
Ext A	75.0 %	11.3 %	U
Ext B	75.0 %	11.3 %	N
Ext C	75.0 %	11.3 %	D

SLTB: Xantus's Murrelet

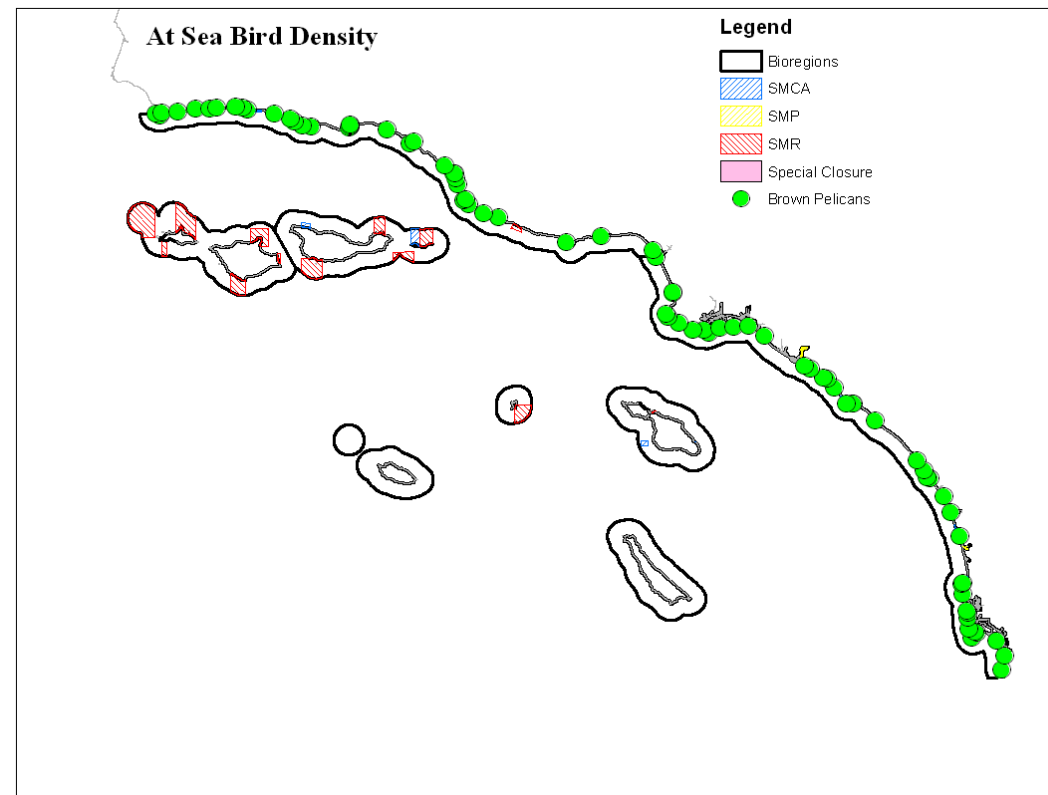
	West Islands	Mid Islands	East Islands
	100 %	0.1 %	N
	100 %	0.1 %	E
	100 %	0.1 %	X
	100 %	0.1 %	T
	100 %	0.1 %	
	100 %	0.1 %	R
	100 %	0.1 %	O
	100 %	0.1 %	U
	100 %	0.1 %	N
	100 %	0.1 %	D

Prop = Proposal Lap = Lapis Opl = Opal Top = Topaz Ext = External

Seabird Roost Sites



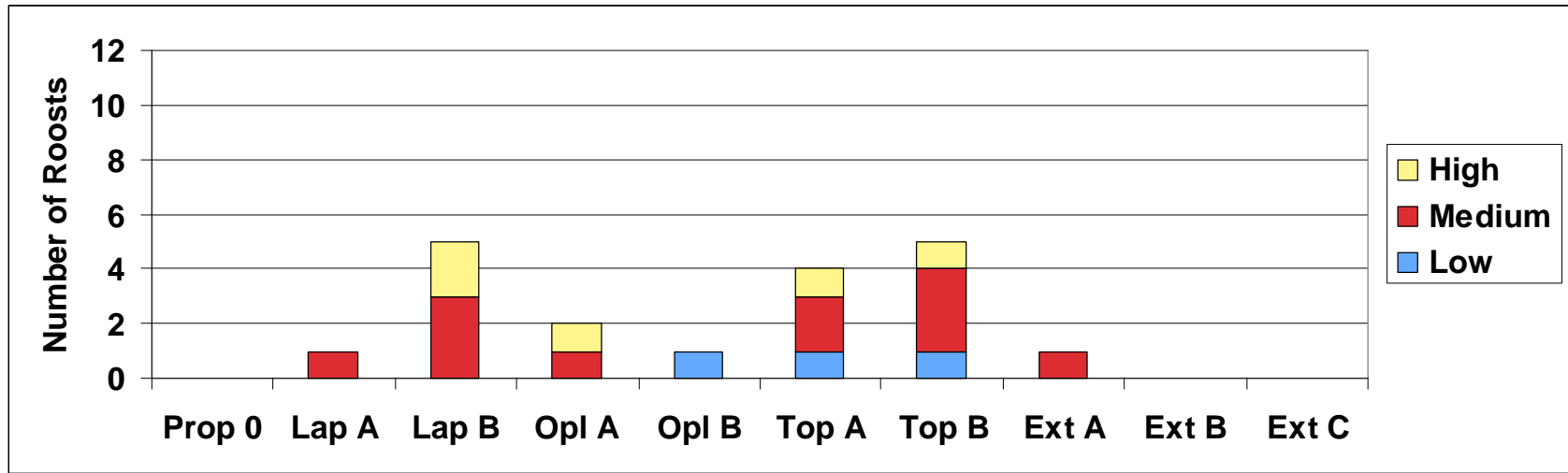
- Focused on brown pelicans
- Currently have data only for mainland sites
- Classified sites by level of importance
 - High: >500 birds
 - Medium: 100 – 500 birds
 - Low: never >100 birds



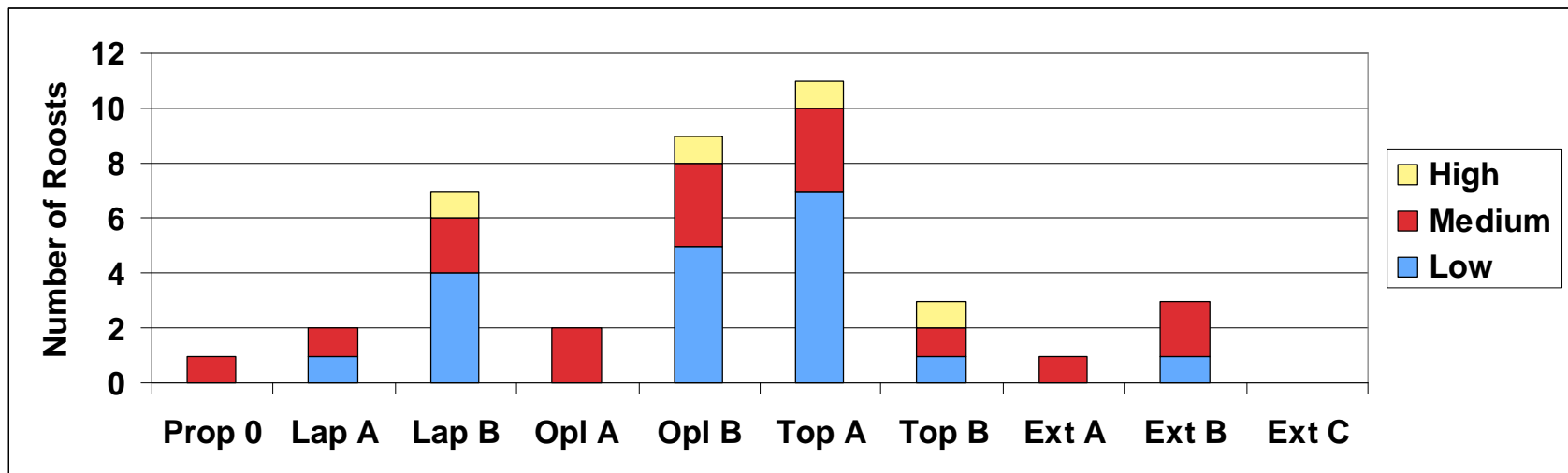


Mainland Roosts

North Mainland



South Mainland





Near-Colony Foraging Areas

- Focused on five species: Brandt's cormorant, pelagic cormorant, pigeon guillemot, least tern, and bald eagle
- Calculated Foraging Index (F_{SMR}) for protection within SMRs

$$F_{SMR} = \sum p_i \times f_i$$
 where p_i = colony population and f_i = amount of foraging area within SMR
- Compared F_{SMR} to Maximum Foraging Index calculated as if study region was all one SMR

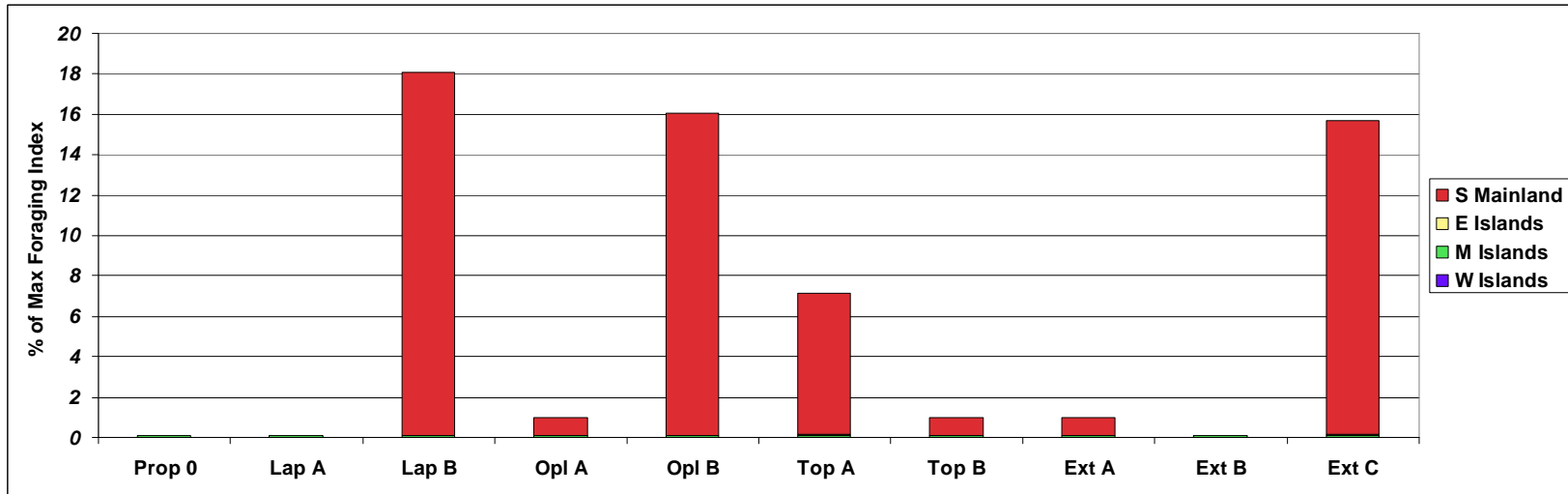
$$F_{max} = \sum p_i \times f_i$$
 where p_i = colony population and f_i = amount of foraging area within study region
- Figures show percent of maximum potential foraging area protected under each array

$$F_{SMR} / F_{max} \times 100$$

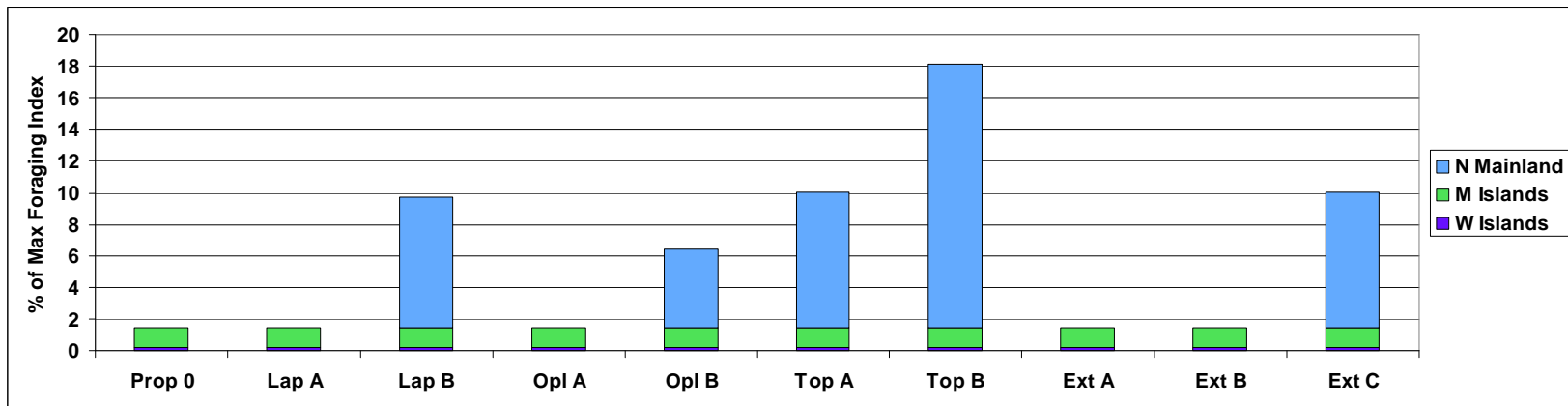


Near-Colony Foraging Areas

Brandt's Cormorant



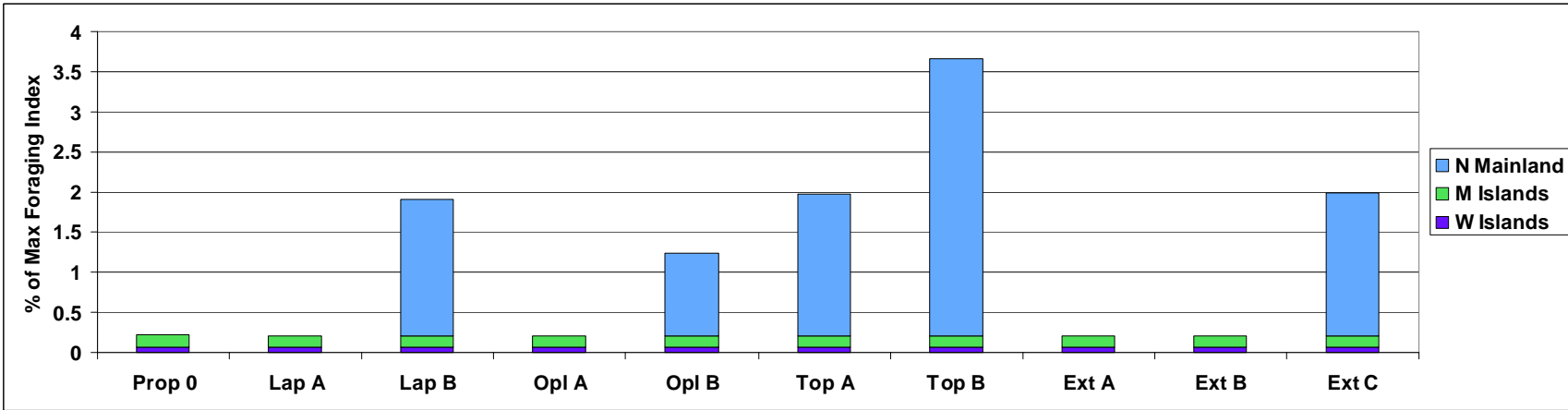
Pelagic Cormorant



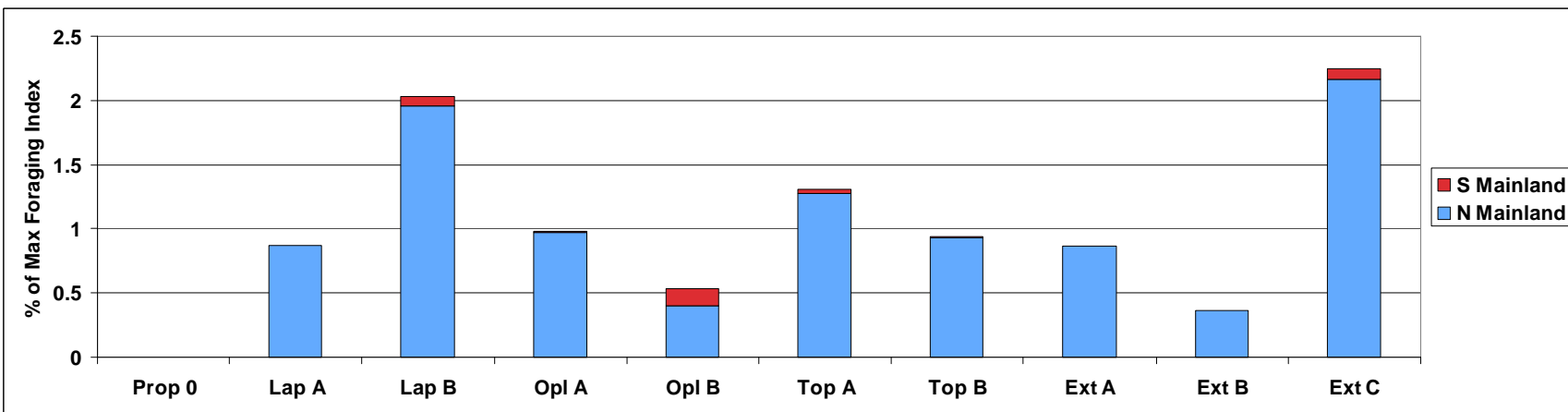


Near-Colony Foraging Areas

Pigeon Guillemot



Least Tern





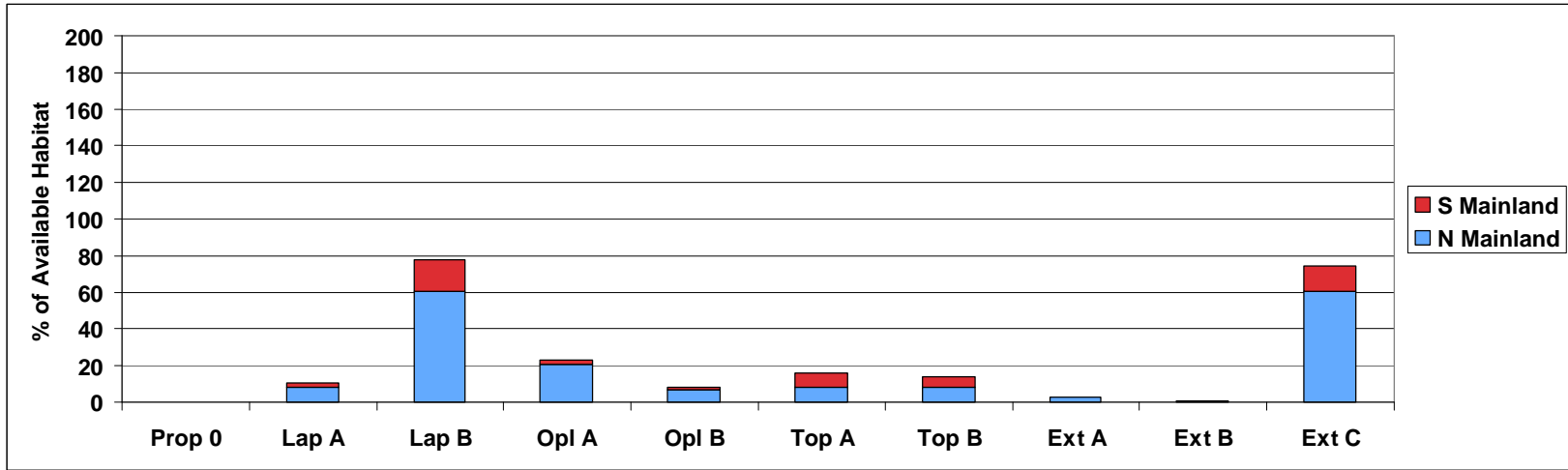
Estuarine and Coastal Habitat

- **Goal was to evaluate protection areas used by waterfowl, marsh birds and shorebirds**
- **Audubon Christmas Bird Count data did not provide adequate coverage of study region**
- **Focused on habitat protection instead**
 - Analyzed amount of estuarine habitat protected
 - Analyzed amount of coastal marsh, tidal flat and beach habitat protected

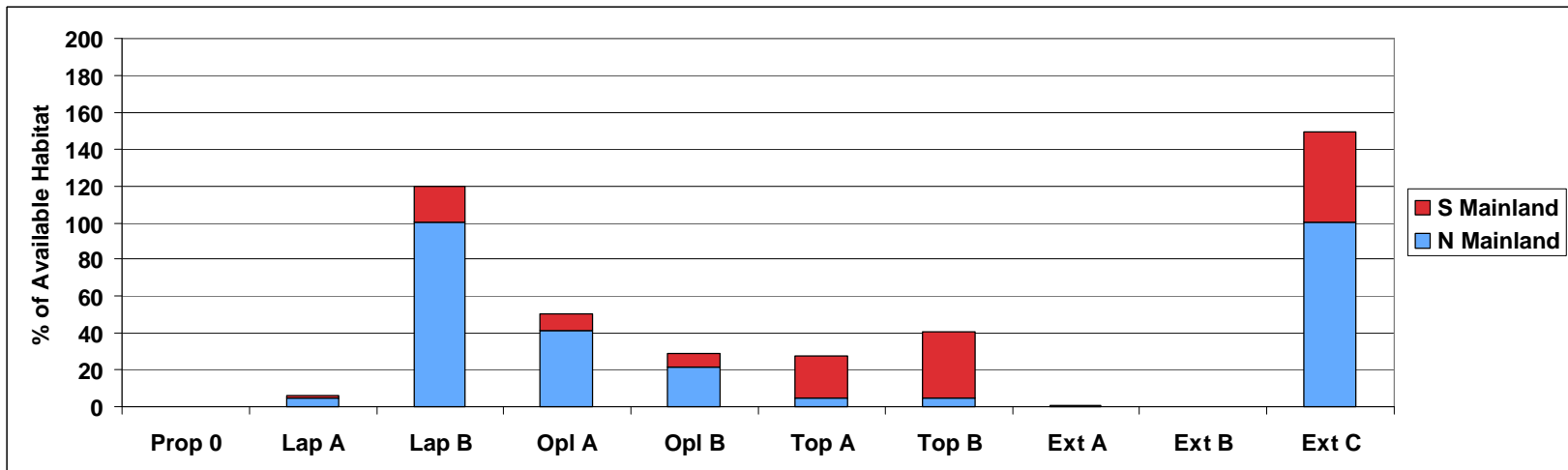


Estuarine and Coastal Habitat

Estuaries



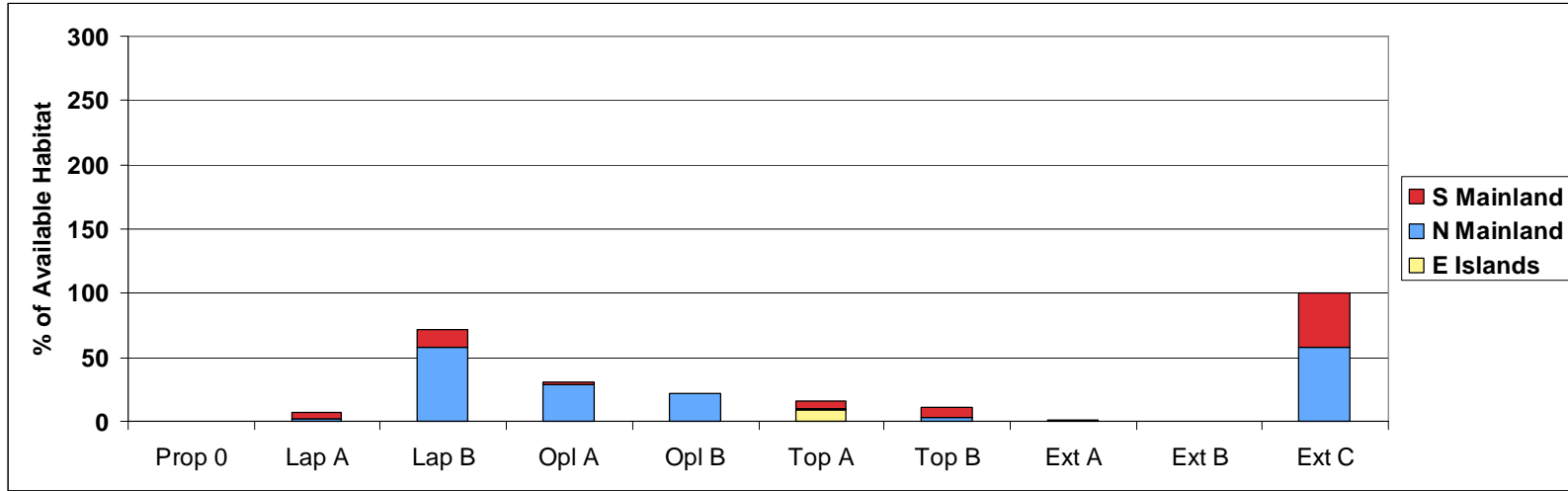
Coastal Marshes



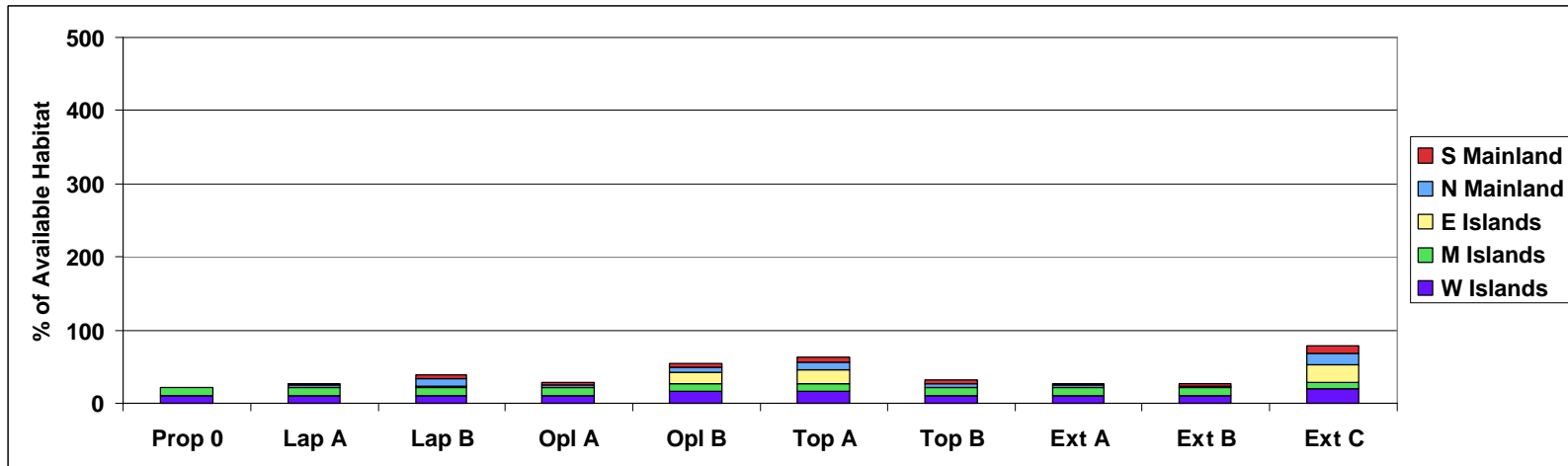


Estuarine and Coastal Habitat

Tidal Flats



Beaches





Summary

- **Seabird Breeding Colonies**
 - External C provides the most protection in all bioregions
 - Lapis B and Topaz A provide more protection within mainland bioregions
 - All other arrays similar to Proposal 0 (existing MPAs)
- **Seabird Roost Sites**
 - Lapis A, Topaz A and Topaz B provide greatest protection for north mainland bioregion
 - Lapis B, Opal B and Topaz A provide greatest protection for south mainland bioregion



Summary

- **Near-Colony Foraging Areas**
 - Brandt's cormorant and pelagic cormorant receive most protection from proposed arrays
 - Most protection occurs within mainland bioregions.
 - Lapis B, Opal B and External C provide greatest protection for Brandt's Cormorant
 - Topaz B provides greatest protection for pelagic cormorant
- **Estuarine and Coastal Habitats**
 - Estuaries and coastal marshes receive the most protection
 - Lapis B and External C provide the most protection of these habitats



For SAT Discussion

At-Sea Seabird Densities

